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(54) **Universal cavity tray.**

(57) There is described a cavity tray folded from a flexible waterproof sheet blank having an elongate rectangular base region having two longer sides and two shorter ends, a rectangular end wall (4, 5) region joined along one of its edges to a first end of the base region and a bridging portion (12) joined to one side of the base region, the bridging portion (12) and the end wall (4, 5) portion being joined by at least one right isosceles triangle (9a, 9b) region the hypotenuse (10) (11) of which intersects that corner of the base region at which the bridging (12) portion and the end wall (4, 5) portion meet. The folding is such that the end wall (4, 5) stands at right angles to the base region and the triangular region (9a, 9b) lies parallel to and adjacent the end wall (5), and the bridging portion (12) extends obliquely upwardly away from the base region, and the triangle (9a, 9b) region may be secured to the end wall.

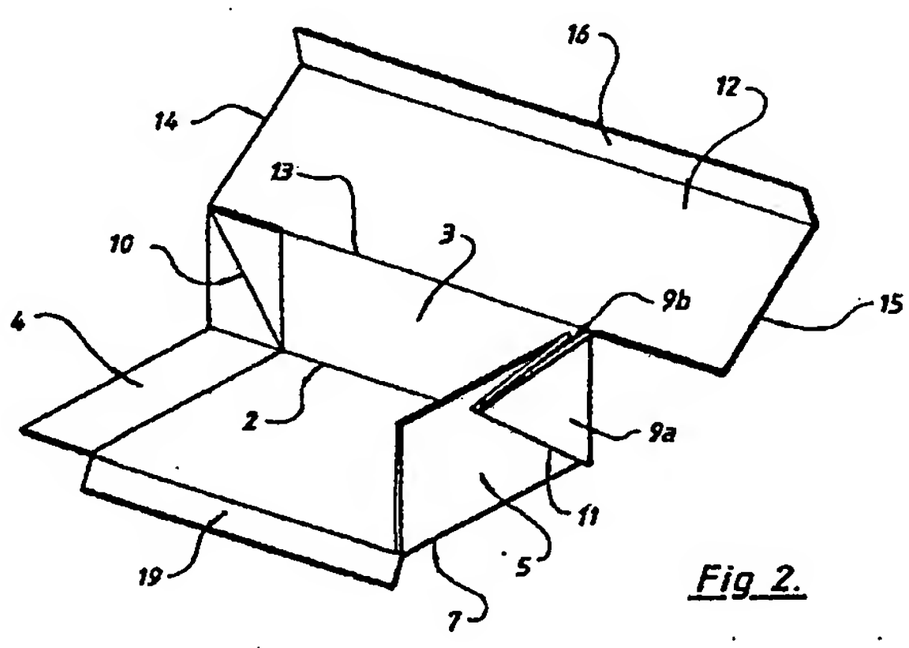

Fig 2.

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UNIVERSAL CAVITY TRAY

The present invention relates to damp-proofing for buildings, and is particularly concerned with the weatherproofing of an abutment, such as the junction of a flat or pitched roof with a cavity wall extending thereabove.

The traditional method of providing a damp-proof course at an abutment is to lay a sheet of lead, suitably cut and folded, into the mortar of the wall above the adjoining roof. For a pitched roof, this also necessitates inserting rhomboid-shaped gussets into the lead sheet by welding, if the damp-proof course is to span the cavity in the wall.

More recently, proprietary components for providing a damp-proof course and cavity seal have been introduced, and some of these are described in UK patent 2,142,359. Such "cavity trays" provide a base corresponding roughly in size to a standard brick or block, and end wall and a rear wall, the rear wall having a cavity-spanning portion extending from its upper edge.

The cavity trays are built into the wall above the adjoining roof-line as a vertically spaced and horizontally overlapping series so that water penetrating the exterior of the wall and running down in the cavity can be directed out through the outer wall skin onto the roof.

The main disadvantage of these trays in practical terms is that a builder must use three distinct components for each stepped abutment: There must be a "ridge tray" at the apex (with preferably end walls at both ends) and positioned below and to the respective sides of the ridge tray there must be cavity trays of "left-hand" and "right-hand" types, the trays having their end walls at different ends of the tray in each case, and a catchment tray with end walls at both ends, at the lower end of the abutment.

Clearly manufacture and stocking of three or four distinct components is uneconomic, particularly when the unit cost itself is high.

The present invention seeks to overcome the problem by providing a single component which may serve with equal ease as a ridge tray, catchment tray or as a left- or right-handed cavity tray for use on pitched roof abutments, and may also be used on flat roof abutments as a combined damp-proof course and cavity seal.

According to the present invention, a blank for forming a cavity tray comprises a rectangular base region, a rectangular end wall region joined along one of its longer sides to an end of the base region and a bridging portion joined to one side of the base region, the bridging portion and the end wall portion being joined by at least one right isosceles triangle region, the hypotenuse of which intersects the corner of the base region at which the bridging portion and end wall region meet.

In an advantageous embodiment, the blank is formed so as to by symmetrical about the transverse bisector of the base region, the blank having two end wall regions and at least two triangular regions.

In a further advantageous embodiment, a rear wall portion is positioned between the bridging portion and the base region, the rear wall portion being rectangular and having a length equal to that of the base region and a width equal to that of the end wall portions.

In a further advantageous embodiment an extension to the base region can be folded to form a pocket, welt or sleeve to contain a lead flashing, thus ensuring a weather tight joint between the cavity tray and a flashing sheet extending down the outer face of the abutment wall.

In the preferred embodiment, the blank has a base region, two end wall portions, a rear wall portion and a bridging portion extending beyond the ends of the rear wall portion to be coterminous with the end wall portions, the areas situated between the end wall portions and the bridging portion being squares and each being divided into two triangular regions by their respective diagonal intersecting the adjacent corner of the base region. Advantageously the sides of the squares adjacent the bridging portion may be defined by slits in the blank material, and the bridging portion may have a stiffening lip extending along its side remote from the base region.

A stiffening or locating lip may be positioned along the long edge of the base portion remote from the rear wall and bridging portion.

In all the above embodiments, the various regions of the blank may be defined by lines of weakness such as scored lines or by lines of reduced thickness formed by other means.

An embodiment of the invention will now be described in detail with reference to the accompanying drawings, in which;

Figure 1 is a view of a sheet blank for forming a cavity tray.

Figure 2 is a perspecive view of the sheet blank of figure 1 formed into a cavity tray.

Figure 3 is a perspecive view of an alternative configuration of a cavity tray in a wall.

Figure 4 shows a further alternative of a cavity tray blank; and

Figures 5 and 6 are a perspective view of a further alternative blank and a sectional view showing a joint between two cavity trays taken on line VI ... VI of figure 5.

Figure 7 shows a view similar to figure 2, showing a flashing sheet attached to the folded cavity tray blank.

Referring now to figure 1, the blank for a cavity tray is a substantially rectangular sheet of flexible material of sufficient stiffness to be self-supporting over a short span. The preferred material is a polypropylene sheet approximately 1 mm in thickness, but a sheet of 0.8 mm has been found to be satisfactory.

The blank is divided into a number of rectangular regions by fold lines, the fold lines being lines of weakness formed by reducing the thickness of the sheet, usually by applying pressure to crush the sheet or by scoring the sheet to about half its thickness. It is essential that the sheet is not penetrated by the scoring tool, or its water tightness will be impaired.

Referring to figure 1, the blank comprises a rectangular base portion 1 whose size is a function of the size of a standard brick or block used in building construction and the slope of the abutment. Along one side edge of the base portion 1, and joined thereto by fold line 2, is a rear wall portion 3 which is rectangular and has a length equal to the base portion 1 and a width corresponding to the height of the building block.

At each end of the base portion 1, an end wall portion 4, 5 is joined thereto by a further fold line 6, 7. The dimensions of the end walls 4, 5 correspond roughly to those of the end faces of the building block.

The shorter edges of the rear wall 3 and the end walls 4, 5 are each joined by means of a square region 8, 9 composed of two isosceles right angled triangles 8a, 8b, 9a, 9b, joined along their hypotenuses by a fold line 10, 11.

A bridging portion 12 is attached by a fold line 13 to the edge of the rear wall 3 remote from the base 1, the bridging portion 12 extending beyond the ends of rear wall 3 to terminate in end edges 14, 15 level with the edges of the end walls 4, 5 remote from the base portion 1. A stiffening/weathering lip 17 extends along the edge of the base portion 1, remote from the rear wall.

A stiffening lip 16 extends along the edge of the bridging portion 12 remote from the rear wall 3.

Two slits 17, 18, shown exaggerated in width in figure 1 may be formed in the blank, extending along the junctions of triangles 8b and 9a with the bridging portion 12, for reasons which will become apparent.

To form the blank into a cavity tray, it is first decided which "hand" the tray is to have, thereby determining at which end of the base 1 must an upstanding end wall be formed. Figure 2 shows a cavity tray formed from the blank of figure 1 with the base 1 extending to the left of the end wall, as viewed from the open side of the tray. Such a tray is a "left-hand" tray, since it is installed on the left side of a sloping ridged abutment when viewing along the ridge towards the abutment wall.

To form the left-hand tray, end wall 5 is folded upwardly along fold line 7 to assume a position perpendicular to the base. Square area 9 is also folded upwardly, since it is connected to end wall 5 and the slit 18 separates it from bridging portion 12.

The rear wall 3 is then raised by folding along fold line 2 and simultaneously pinching together triangles 9a and 9b to form a fold along their common hypotenuse 11. The triangles 9a, 9b then assume a superposed configuration and may be drawn forward to lie alongside the end wall 5 as shown in figure 2. A clip (not shown) may be applied to secure triangles 9a, 9b to the end wall 5 in this position. The superposed triangles may be left unsecured if desired.

The bridging portion 12 is then folded at line 13 to extend upwardly and rearwardly from the rear wall 3 at an angle to suit the cavity width, and the stiffening rib 16 folded upward to support the now overhanging end 15 of the bridging portion 12.

The cavity tray is now ready for building into an abutment wall in the conventional manner, with end wall 5 and triangles 9a, 9b set in a vertical mortar joint between bricks in the outer leaf of a cavity wall, bridging portion 12 extending across the cavity to the inner leaf, and stiffening rib 16 lying on the inner leaf.

If preferred, nails may be used to secure stiffening rib 16 to the inner leaf, or the stiffening rib may be embedded in a mortar joint if dimensions allow, or may lie behind any cavity insulation material.

Clearly, to form a right-hand cavity tray the same blank is used, but end wall 4 is raised instead of end wall 5 and triangles 8a, 8b pinched folded and secured instead of triangles 9a, 9b.

To form a ridge or catchment tray having two end walls, for use at the apex and base of the abutment damp-proofing, both end walls 4 and 5 may be raised and both pairs of triangles 8a, 8b, 9a, 9b are pinched, folded and optionally secured as described. The ridge tray may be formed without end walls by folding along fold line 2.

The present invention thus provides a simple and economic solution to the problem of providing damp-proofing at sloping abutments using minimum of different components.

To further increase its versatility in use, and

improve its impermeability, slits 17 and 18 may be omitted altogether, or may be formed on site when the cavity tray is assembled simply by tearing or cutting the scored blank.

In this alternative installation shown in figure 3, the triangles 9a, 9b are not secured to the end wall 5 and thus embedded in a mortar joint, but are left free to lie within the cavity of the wall. In this installation also fold line 13 is omitted, and thus there is no "rear wall" corresponding to rear wall 3 of figure 2. Instead, the bridging portion 12 extends upwardly and rearwardly directly from the base portion 1, with stiffening rib 16 again lying on the inner leaf of the cavity wall.

In this embodiment it is also possible to omit the slits 17 and 18 and the fold lines defining triangles 8b and 9a from the blank, whereupon the installed position is that shown in figure 4, with the triangular part 9b within the cavity and bridging portion 12 slightly curved and inclined across the cavity.

The blank may be further modified by adding a foldable lip to the edges of end walls 4 and 5 remote from the base 1. The lip, when the cavity tray is used in a sloping abutment, would underlie the base of the adjacent higher cavity tray and improve water sealing in the horizontal direction.

The lip also has utility in that the cavity tray may then be used to damp-proof an abutment wall over a flat roof, as will be described below in relation to figures 5 and 6.

The blank shown in figure 5 differs from that of figure 1 only in that the base 1 is extended to a dimension L so as to accomodate a plurality of blocks or bricks, and lips 19 and 20 are provided on the end walls 4 and 5 to extend from the upper edges of the end walls when erected.

The cavity tray of figures 5 and 6 is used to seal a cavity above a flat roof, for example a built-on garage or the like, by simply erecting the end walls 4 and 5 of the blank to lie in vertical planes, by folding as before described and then placing the bases 1 of a series of cavity trays on a course of bricks above the flat roof level so as to be in endwise abutment. Where each adjacent pair of trays meet, the lip 19 is folded to extend downwardly between the respective tray end walls 5 and 4, and the lip 20 of the other tray is folded down to lie adjacent the inner face of the end wall of the first tray, thus forming a joint through which moisture cannot penetrate downwards into the wall. To facilitate this folding, the lips 19 and 20 may be attached to their respective end walls 5 and 4 by a pair of parallel spaced hinge lines 21, to provide clearance between the end wall and its lip when required. The folded lips 19, 20 are seen in the enlarged cross-sectional view of figure 6. Alternatively the lip can be dispensed with and a separate U-shaped piece fitted onto the adjacent end panels 4, 5.

In a alternative embodiment, the slits in the blank may be omitted, and the blank folded as seen in the cavity tray of figure 4. This may, however, involve difficulties in the sealing of end-to-end joints between trays.

In order further to simplify installation, and weather proofing at an abutment, the cavity tray blank may have attached to one edge a flashing sheet adapted to extend down the outer surface of the wall from the base 1 of the cavity tray, so that water is shed onto the roof surface and cannot re-enter the wall skin to percolate down below roof level. The flashing may be factory or site fitted into the welt shown in figure 7, or the flashing installed at the same time as installing the cavity tray on site.

Claims

1. A blank for forming a cavity tray from a sheet of flexible impermeable material comprising an elongate rectangular base region having two longer sides and two shorter ends, a rectangular end wall region joined along one of its edges to a first end of the base region and a bridging portion joined to one side of the base region, the bridging portion and the end wall portion being joined by at least one right isosceles triangle region the hypotenuse of which intersects that corner of the base region at which the bridging portion and the end wall portion meet.

2. A blank according to Claim 1, wherein a second end wall portion is joined to a second end of the base region, and a further at least one right isosceles triangle section joins the second end wall portion to the bridging-portion, the blank being symmetrical about the transverse bisector of the base region.

3. A blank according to Claim 1 or Claim 2, wherein two right isosceles triangle regions are situated between the or each end wall portion and the bridging portion, the hypotenuses of the isosceles triangle regions being adjacent.

4. A blank according to any preceding Claim, wherein an elongate rectangular rear wall portion is situated between the base region and the bridging portion, the rear wall portion having a first dimension extending parallel to a side of the base region and having a length equal thereto.

5. A blank according to any preceding Claim, wherein the base region, along its side remote from the bridging portion, is provided with means for the attachment of flashing sheet or element.

6. A blank according to Claim 5, wherein the means for attachment of a flashing sheet comprises a pocket formed by folding two strips extending along the side of the base region so that a first strip underlies the base region and a second strip underlies the first strip in a "Z" formation.

7. A blank according to any preceding Claim, wherein the bridging portion has a stiffening rib joined thereto at its edge remote from the base region.

8. A blank according to any preceding Claim, wherein one end wall has, at its edge remote from the base region, a foldable lip extending away from the base region.

9. A method of forming a cavity tray for a building, comprising folding a blank of flexible waterproof material having an elongate rectangular base region having two longer sides and two shorter ends, a rectangular end wall region joined along one of its edges to a first end of the base region and a bridging portion joined to one side of the base region, the bridging portion and the end wall portion being joined by at least one right isosceles triangle region the hypotenuse of which intersects that corner of the base region at which the bridging portion and the end wall portion meet so that the end wall stands at right angles to the base region and the triangular region lies parallel to and adjacent the end wall, and the bridging portion extends obliquely upwardly away from the base region.

10. A method according to Claim 9, wherein the triangle region is secured to the end wall.

11. A method of forming a cavity tray comprising folding a blank having an elongate rectangular base region, a rear wall portion extending along one side of the base region, an end wall portion extending across one end of the base region, two right isosceles triangle regions arranged between the end wall and rear wall portions with their hypotenuses intersecting the adjacent corner of the base region, and a bridging portion extending along the edge of the rear wall portion remote from the base region, the folds being such that the end wall, the rear wall and the base region lie in orthogonal planes, the two triangular regions lie either adjacent and parallel to the end wall or in an extension of the plane of the rear wall beyond the end wall, and the bridging portion extends obliquely upwardly and rearwardly from the upper edge of the rear wall.

12. A method according to Claim 11 wherein the triangular regions lie adjacent the end wall, and further including the step of securing the triangular regions to the end wall.

13. A blank for a cavity tray substantially as described herein.

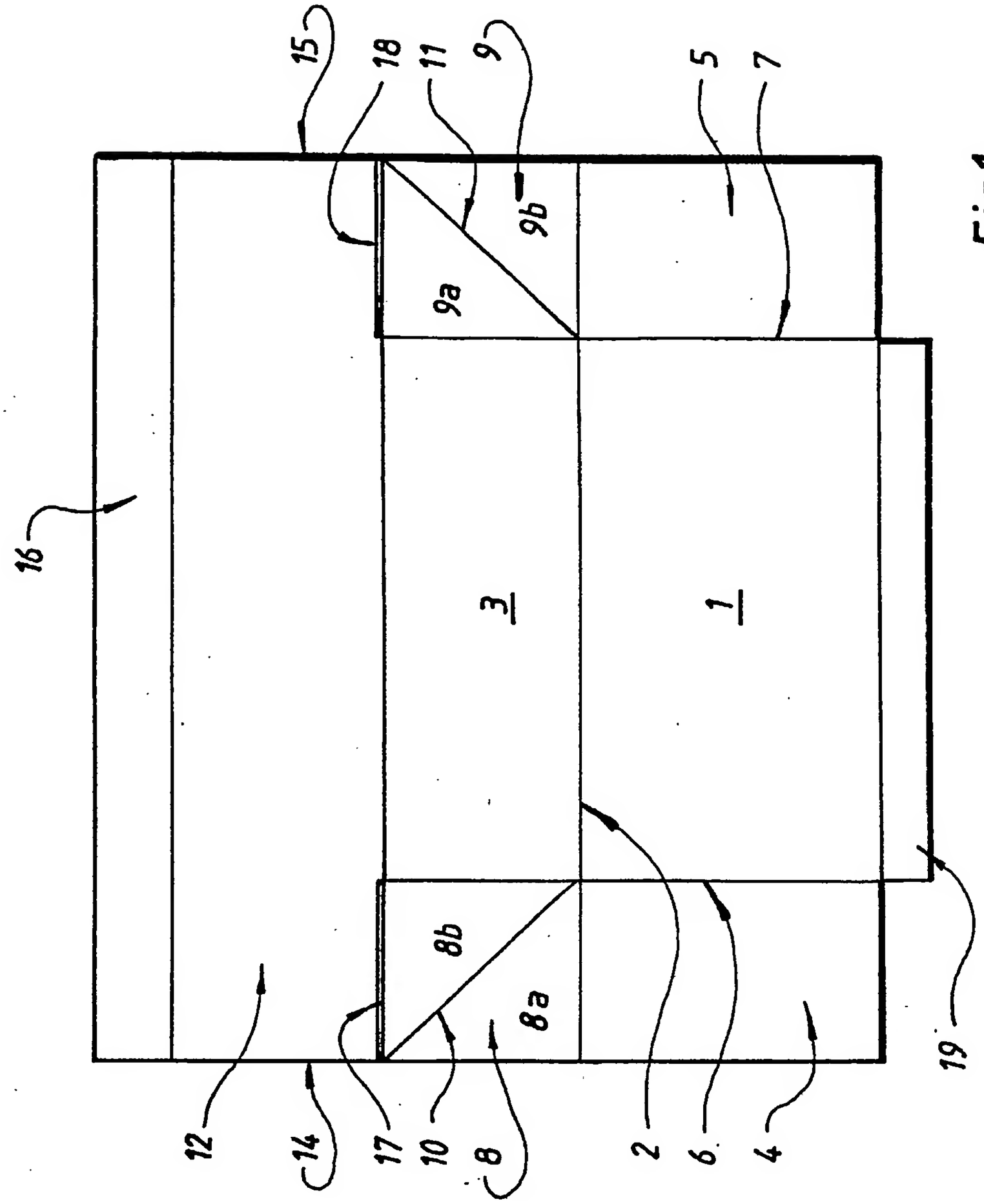


Fig.1.

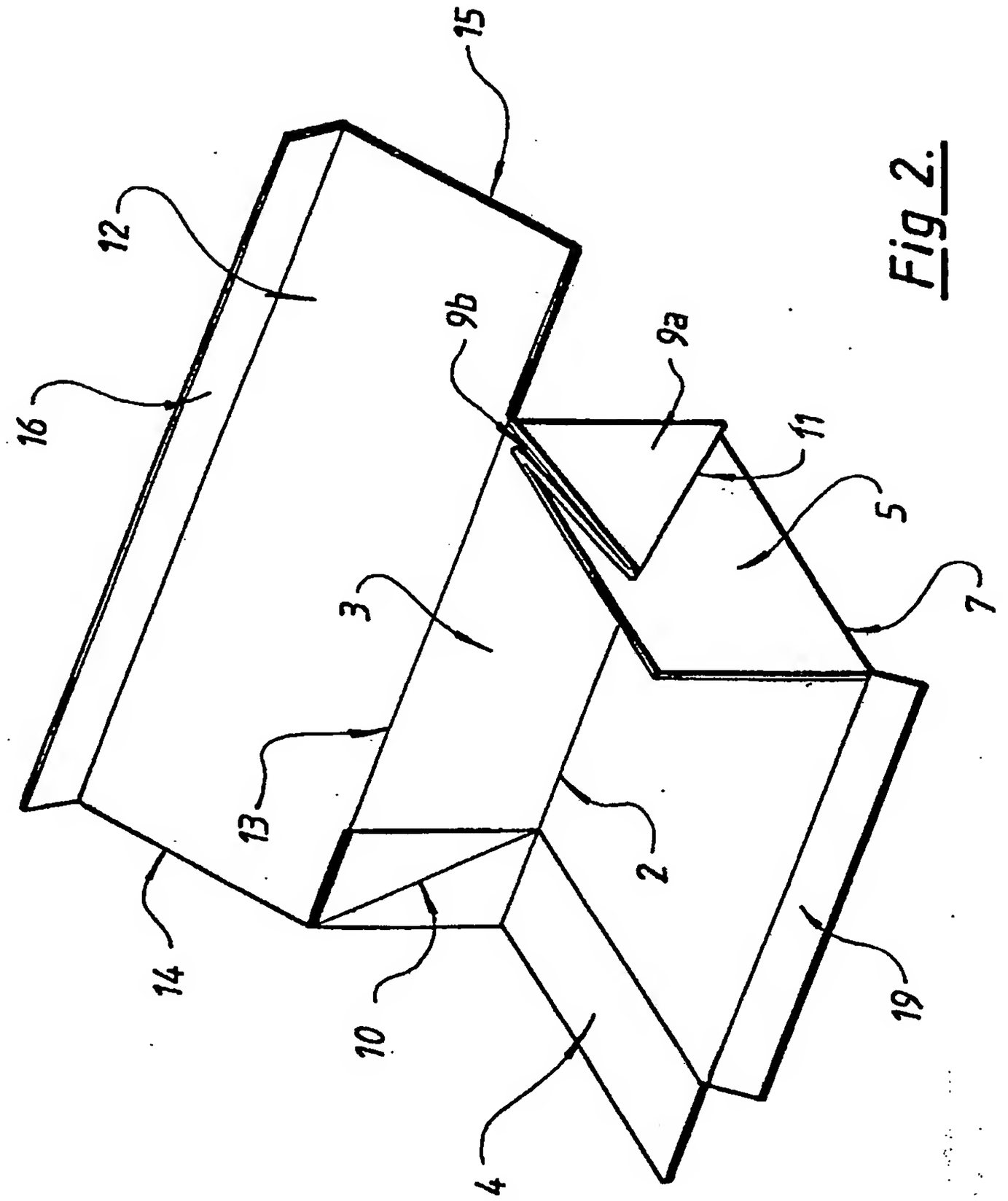


Fig 2.

Fig 3.

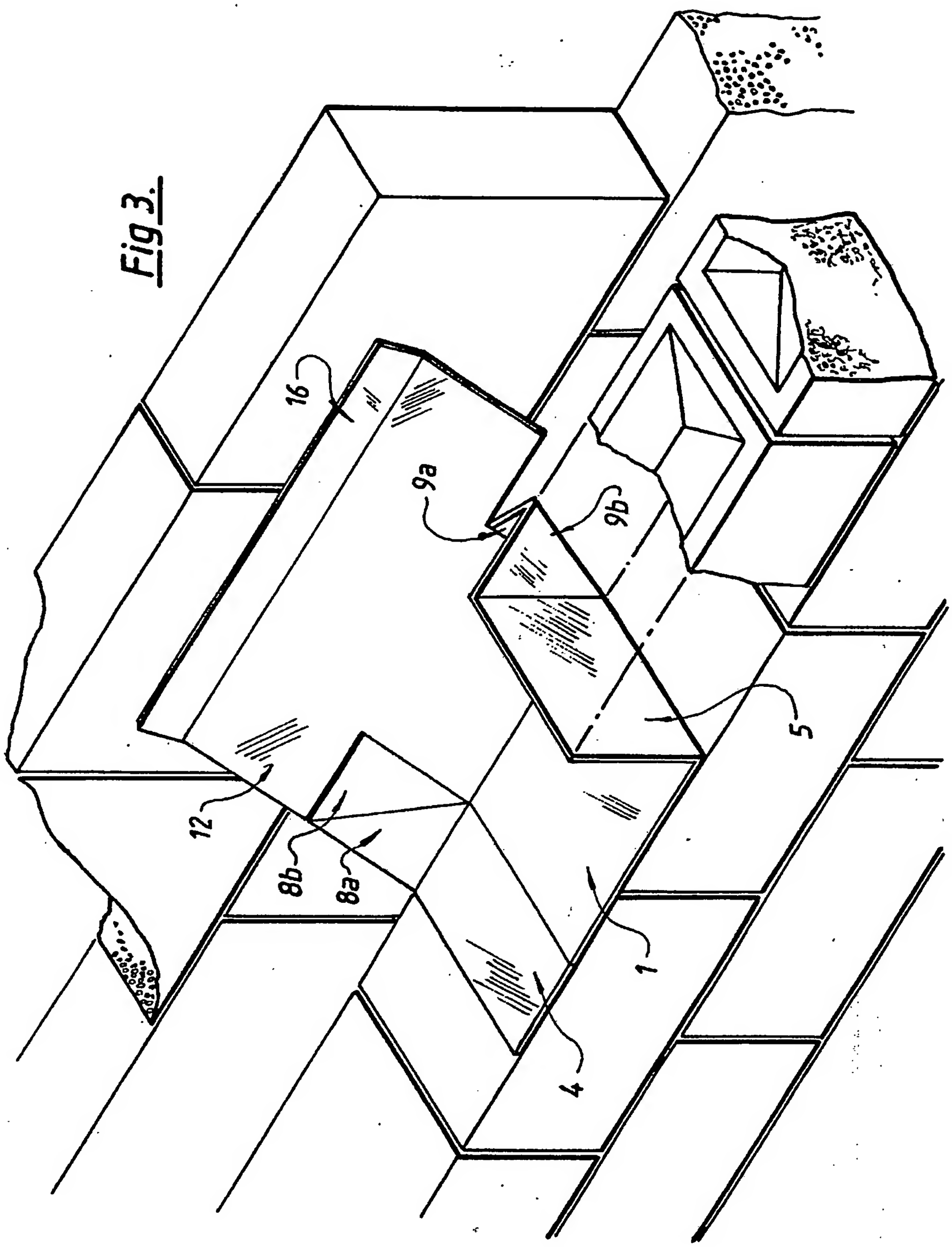
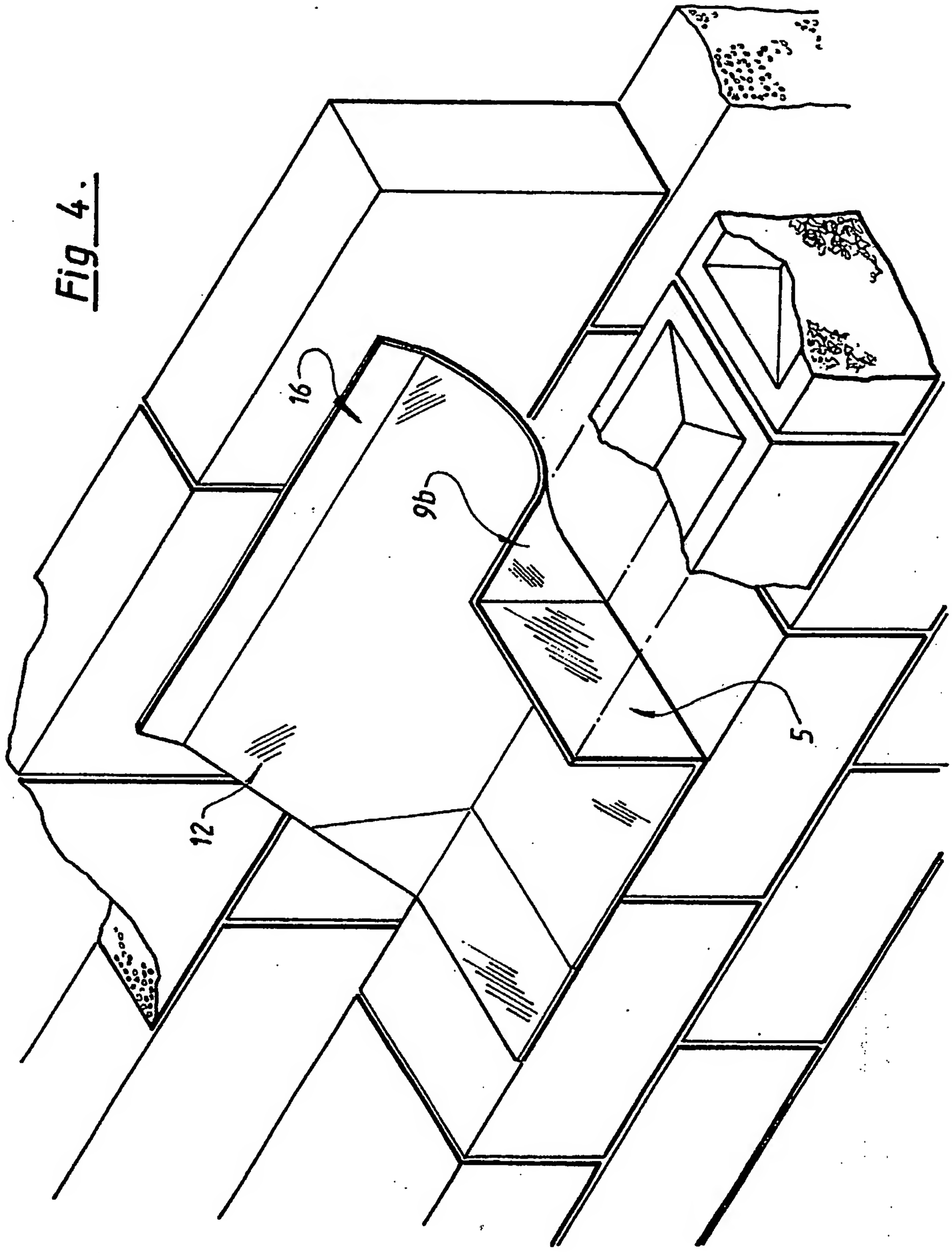


Fig 4.



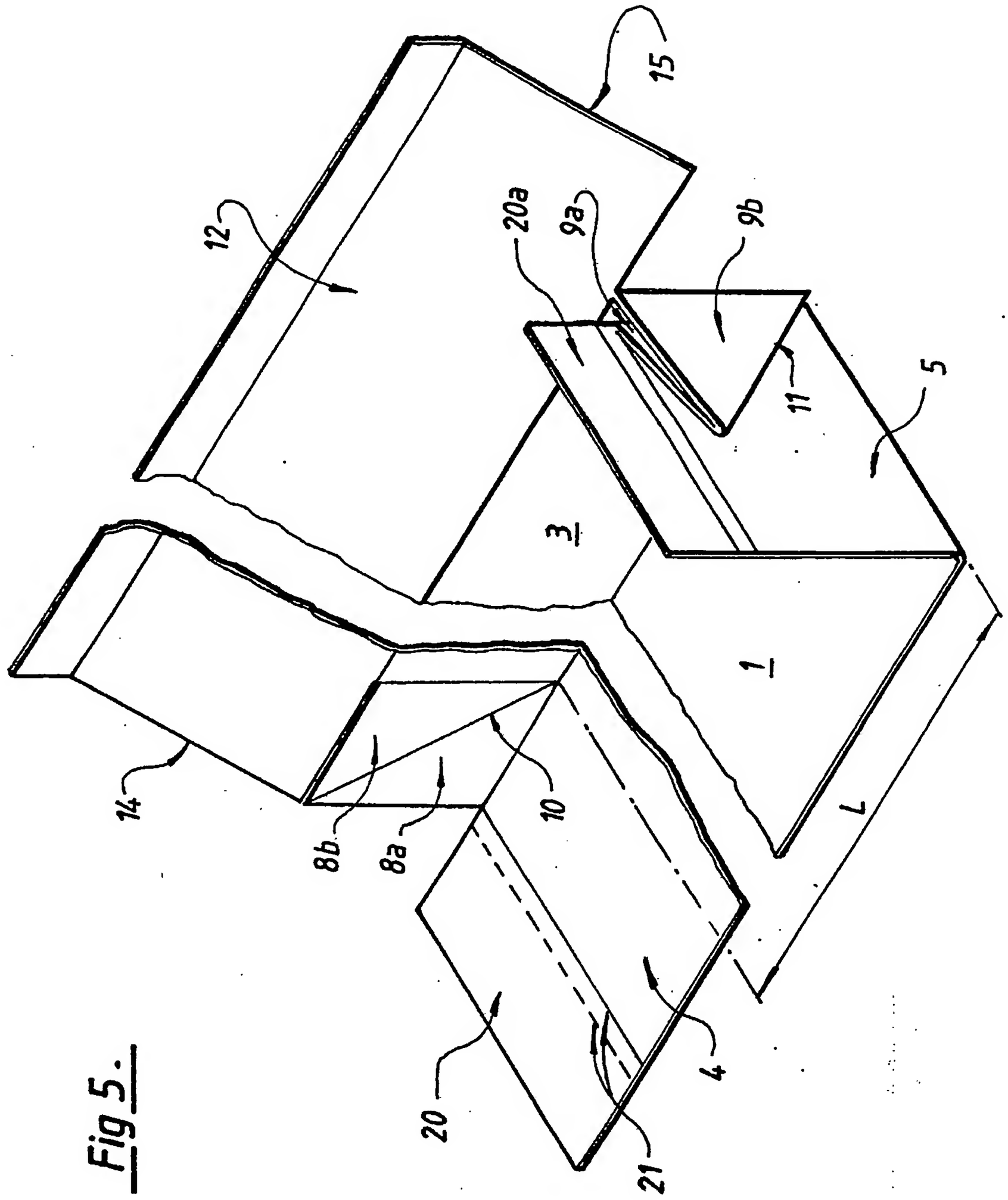
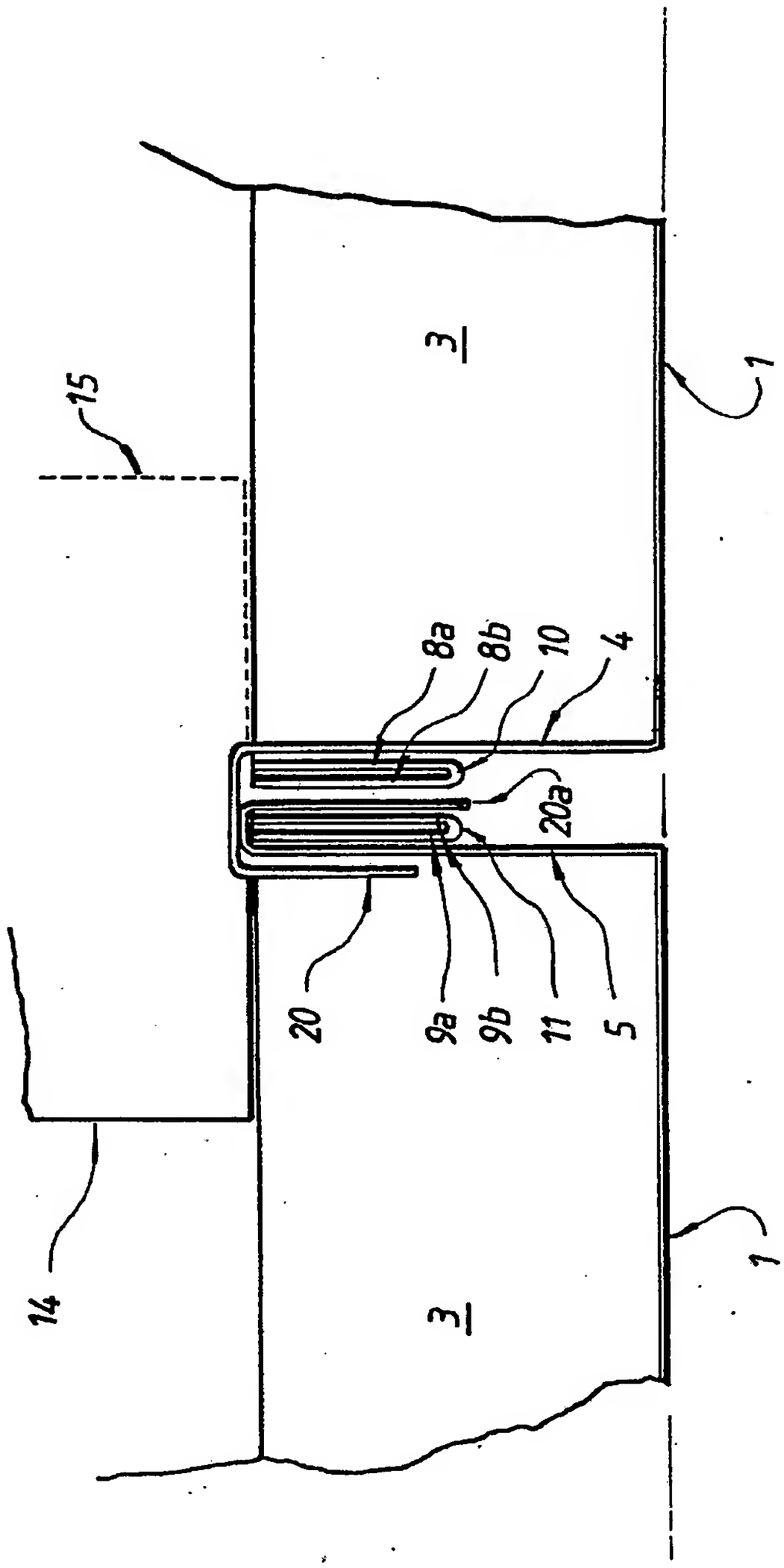


Fig 5.

Fig 6.



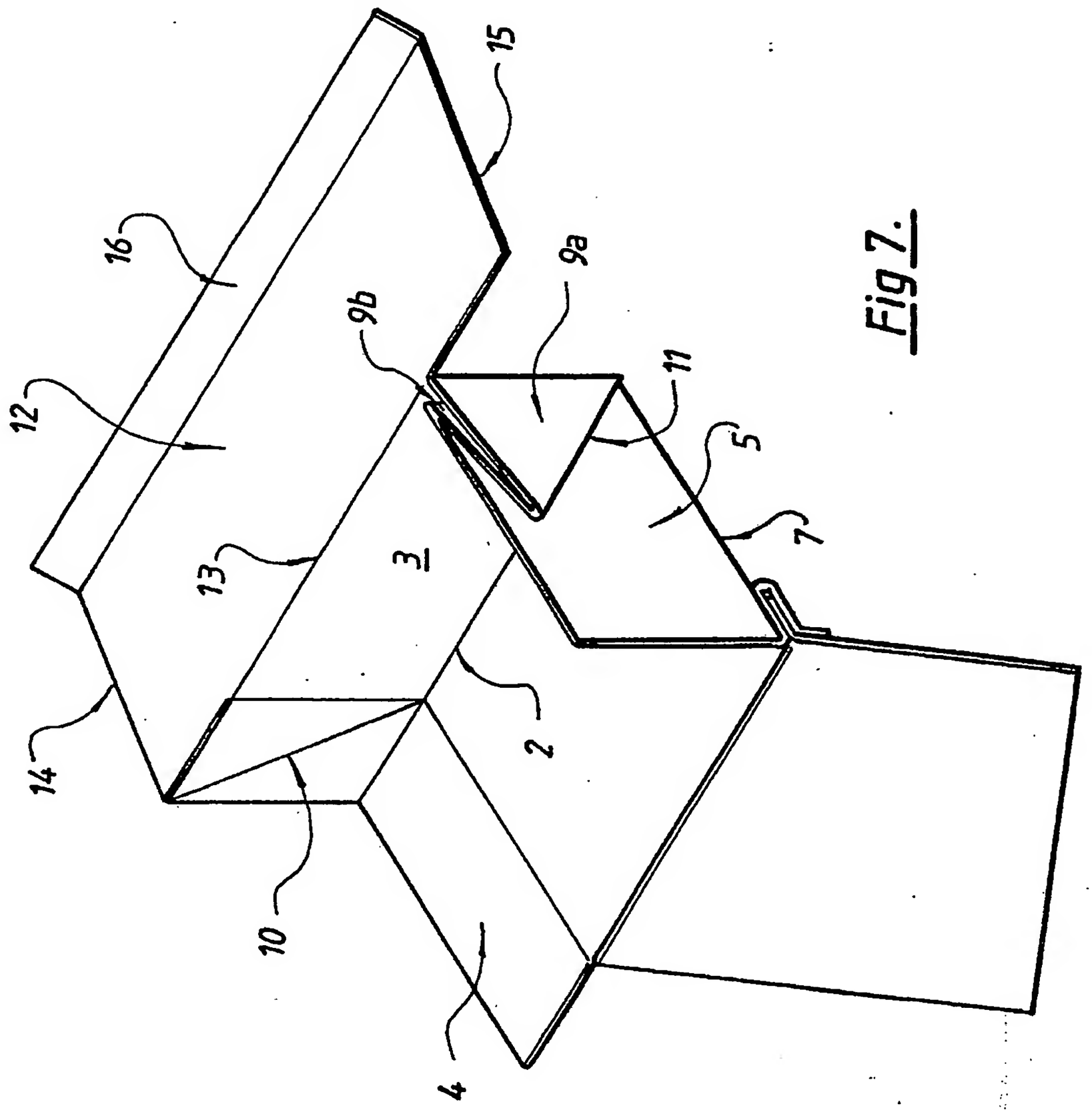


Fig 7.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 88 11 8214

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	GB-A-2 164 368 (SHILLABEER) * Page 1, line 111 - page 2, line 100; figures *	1	E 04 C 3/02
A	GB-A-2 179 078 (SHILLABEER) * Page 1, line 96 - page 2, line 92; figures *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

E 04 B
E 04 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	20-01-1989	LAUE F.M.

CATEGORY OF CITED DOCUMENTS

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